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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,516	09/11/2006	Daniel M. Giaquinta	HNDA 2023.2	1180
45735 7590 08/14/2009 SENNIGER POWERS LLP (SMX) 100 NORTH BROADWAY 17TH FLOOR ST. LOUIS, MO 63102				
EXAMINER POLYANSKY, ALEXANDER				
ART UNIT		PAPER NUMBER		
1793				
NOTIFICATION DATE		DELIVERY MODE		
08/14/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspatents@senniger.com

Office Action Summary

Application No.

10/568,516

Applicant(s)

GIAQUINTA ET AL.

Examiner

ALEXANDER POLYANSKY

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-9 and 74-94 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-9 and 74-94 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 16, 2009 has been entered.

Status of the Claims

Claims 1-2, 5-9, and 74-94 are pending. Claims 1-2, 5-8, and 74-77 have been amended. Claims 3-4 and 72-73 have been cancelled. Claims 79-94 are new.

Status of Previous Rejections

The 35 U.S.C. 103(a) rejection of claim(s) 1-9 and 72-78 as being unpatentable over Itoh et al., US 5,024,905 has been withdrawn in view of the arguments filed June 16, 2009.

The non-statutory obviousness-type double patenting rejection based on co-pending application 11/341,139 has been withdrawn in view of the applicants' amendment filed June 16, 2009.

Examination on the Merits

Claims 1-2, 5-9, and 74-94 are presented for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 5-9 and 74-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al., US 5,024,905 in view of Ovshinsky et al., US 2003/0050188.

Regarding claims 1 and 7-8, Itoh teaches an electrocatalyst comprising Pt and Cu (column 9, lines 54-55) with 40 to 70 at% for Pt and 9 to 27 at% for Cu (abstract). Thus, the claimed 50 to 80 at% for Pt is overlapped. Prima facie obviousness exists, because both the size and the at% disclosed by Itoh overlap the size and at% ranges recited in the instant claims.

It would have been obvious to one skilled in the art to have selected the claimed range from the disclosed range of Itoh because Itoh has disclosed the same utility in the whole disclosed range. See MPEP 2144.05(I).

Itoh further teaches electrocatalyst composition of the alloy particles having a size of 25 to 50 angstroms (col. 9, lines 54-55).

Itoh does not explicitly teach the electrocatalyst alloy particles have an average particle size which is less than 25 angstroms. However, Ovshinsky teaches platinum (par. 35) electrocatalysts (par. 3) having an average particle size from 10 to 30 angstroms (par. 32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electrocatalyst of Itoh to the 10 to 30 angstroms average particle size as disclosed by Ovshinsky to eliminate the "bulk" waste of the expensive metals such as platinum and maximize the surface area of the electrocatalyst (par. 35) to achieve a higher catalytic activity.

In claim 7, the limitation the concentration of platinum in the electrocatalyst alloy particles is greater than about 60 atomic percent and less than about 80 atomic percent is also overlapped and prima facie obviousness exists as stated above. See MPEP 2144.05(I).

In claim 8, the limitation the concentration of platinum in the electrocatalyst alloy particles is greater than about 65 atomic percent and less than about 75 atomic percent is also overlapped and prima facie obviousness exists as stated above. See MPEP 2144.05(I).

With regard to the limitation for use as a catalyst in oxidation or reduction reactions, the limitation merely states the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations. See MPEP 2111.02(II).

Regarding claims 2 and 76-77, Itoh teaches the claimed sum of greater than about 95 at% of Pt and Cu, which overlaps the claimed range because the outer ranges of both Pt and Cu when added amount to 97 at%.

In claim 76, Itoh teaches an electrocatalyst composition wherein the concentration of platinum in the electrocatalyst alloy particles is 40 to 70 at% (abstract) which overlaps the claimed greater than about 60 atomic percent and less than about 80 atomic percent.

In claim 77, Itoh teaches an electrocatalyst composition wherein the concentration of platinum in the electrocatalyst alloy particles is 40 to 70 at% (abstract) which overlaps the claimed greater than about 65 atomic percent and less than about 75 atomic percent.

Prima facie obviousness exists, because both the size and the at% disclosed by Itoh overlap the at% range recited in the instant claims. It would have been obvious to one skilled in the art to have selected the claimed range from the disclosed range of Itoh because Itoh has disclosed the same utility in the whole disclosed range. See MPEP 2144.05(I).

Regarding claims 5-6 and 74-75, Ovshinsky teaches the average particle size from 10 to 30 angstroms (par. 32), which overlaps the claimed 20 angstroms of claims 5 and 74 and 15 angstroms of claims 6 and 75. See MPEP 2144.05(I).

Regarding claims 9 and 78, Itoh teaches a platinum alloy electrocatalyst (abstract) that is deposited on an electrically conductive carrier (column 5, lines 14-16).

With regard to the limitation for use in electrochemical reactor devices, the limitation merely states the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations. See MPEP 2111.02(II).

Regarding claims 79-94, Itoh in view of Ovshinsky teach particle distribution of the electrocatalyst alloy (table 2 of Itoh) that overlaps the following:

In claims 79-82 and 87-90, the claimed 75, 80, 85, and 90% of the particles that are within 75 to about 125%, and

In claims 83-86 and 91-94, the claimed 75, 80, 85, and 90% of the particles that are within 90 to about 110% of the average particle size (table 2 of Itoh), therefore the limitation is met. See MPEP 2144.05(I).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 5-8, and 74-75 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5, and 14 of copending Application No. 11/205,557 ('557) in view of Ovshinsky et al., US 2003/0050188.

Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Regarding claims 1 and 7-8, '557 teaches the platinum and copper catalyst, wherein the composition of platinum is from 50 to 80 at% (claim 1).

In claim 7, the limitation the concentration of platinum in the electrocatalyst alloy particles is greater than about 60 atomic percent and less than about 80 atomic percent is also met (claim 5).

In claim 8, the limitation the concentration of platinum in the electrocatalyst alloy particles is greater than about 65 atomic percent and less than about 75 atomic percent is also met (claim 14).

'557 does not teach average particle size which is less than 25 angstroms in claim 1. However, Ovshinsky teaches platinum (par. 35) electrocatalysts (par. 3) having an average particle size from 10 to 30 angstroms (par. 32). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electrocatalyst of '557 to the 10 to 30 angstroms average particle size as disclosed by Ovshinsky to eliminate the "bulk" waste of

the expensive metals such as platinum and maximize the surface area of the electrocatalyst as disclosed by Ovshinsky (par. 35).

Regarding claims 5-6 and 74-75, Ovshinsky teaches the average particle size from 10 to 30 angstroms (par. 32).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

Applicant's arguments filed June 16, 2009 have been fully considered but they are not persuasive.

Arguments are summarized as follows:

(I). Applicants assert that the cited Itoh et al. reference does not disclose any composition comprising Pt-Cu electrocatalyst alloy particles in which the average particle size is less than 25 Angstroms, nor does the reference even enable the ordinarily skilled person to prepare such a population of Pt-Cu alloy particles.

(II). Applicants assert that the example of Itoh that teaches 25 to 50 angstroms particle sizes does not meet the limitation of less than 25 angstroms, because the average crystallite size was 33 angstroms.

(III). Applicants assert that the particle size of 30 angstroms or less (col. 7, line 8-9) of Itoh does not disclose or make obvious the claimed composition comprising Pt-Cu electrocatalyst alloy particles in which the average particle size is less than 25 Å since the "less than 30 angstroms" language does not pertain to alloys, but rather to precursor materials, i.e., metal compounds, that are used to prepare the alloys.

(IV). Applicants assert that Itoh et al. prepared 31 alloys and not one of those alloys exhibited average crystallite size of less than 30 Å, much less the claimed requirement of an average of less than 25 Å. Moreover, the disclosure of particle sizes of "not more than 50 Å, preferably not more than 30 Å" refers only to the "catalyst precursor," i.e., the "metal compound" reactants and not to the final alloy product. Itoh et al.'s 31 production examples -- none of which even approach the claimed average particle size limitation are substantial evidence of non-enablement of preparing particles having average particle sizes of less than 25 Å. In view thereof, applicants respectfully submit that the reference does not render the claims obvious for the additional reason that the reference does not enable the claimed subject matter.

(V). Applicants submit that Itoh et al. reference neither anticipates nor renders obvious the compositions of claim 1, and applicants request the rejection be withdrawn. Claims 2, 5-9, and 74-78 depend from claim 1 and are patentable for the same reasons as claim 1 and by virtue of the additional requirements therein. For example, claims 5, 6, 74, and 75 require the alloy particles have average particle sizes of less than 20 Å, or less than 15 Å. These claims are additionally patentable over Itoh et al. since the reference does not disclose any composition having average particle sizes less than 20 Å nor, of course, does it enable making any such composition. In fact, the composition which had the smallest particle size was the pure platinum catalyst, having an average particle size of 23 Å.

(VI). Applicants submit that Itoh et al. does not disclose the particle size minima and maxima about their average "Crystallite size" for most of their Example alloys. Additionally, Itoh et al. did not disclose the percentage of particles that are within particle size boundaries for any of their Examples. The only Example in Itoh et al. that disclosed a range is Production

Example 2 at Col. 9, lines 54-55 in which the particle sizes ranged from 25 Å to 50 Å and had an average particle size of 33 Å. In this example, at least some of the particles observed were 50 Å in size, which is 51.5% larger than the average "Crystallite size." Itoh et al. did not disclose, however, the percentage distribution of particles within the range.

Responses to arguments are summarized as follows:

(I). The examiner's position regarding the average particle size of 25 angstroms or less is as stated in the rejection of claims 1 and 7-8 above. The examiner contends that modification of the particle size to make them smaller has obvious benefits such as maximizing surface area, for one, as disclosed by Ovshinsky.

Further, with regard to the arguments that point out the method of preparation, the applicant's argument that the claimed composition has been prepared by a different or specific process is not persuasive. The claims are drawn to a composition and not to a process of making.

(II). The examiner's position regarding the less than 25 angstroms average particle size is as stated above in the rejection of claims 1 and 7-8. Further, just as Itoh does not expressly disclose that it is the AVERAGE crystallite that was 33 angstroms (col. 9, lines 48-49), one would stand to reason that the 25 to 50 angstroms particle size population could be composed of AVERAGE particles as well.

(III). The examiner invites the applicants to show the difference between an asserted catalyst precursor and the catalyst. The Examiner's position is that the catalyst precursor and the catalyst are one and the same.

The examiner's position regarding the teaching of Itoh is as stated in the previous responses to argument.

(IV). Arguments regarding the 31 examples are moot in view of the new rejection grounds presented above. Itoh in view of Ovshinsky teach the claimed particle sizes.

(V). Arguments regarding claims 2, 5-9, and 74-78 are moot in view of the new rejection grounds as delineated above in the rejections. Itoh in view of Ovshinsky teach the claimed particle sizes of 20 and 15 angstroms.

(VI). The Examiner's position regarding the maxima and minima is delineated in the rejection of claims 79-94. Since Itoh in view of Ovshinsky teach the claimed particle sizes, the claimed maxima and minima would be expected in the particle distribution of Itoh in view of Ovshinsky.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER POLYANSKY whose telephone number is (571)270-5904. The examiner can normally be reached on Monday-Friday, 8:00 a.m. EST - 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ALEXANDER POLYANSKY/
Examiner, Art Unit 1793

/Roy King/
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